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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/615,025	07/13/2000	Stephen A. Klein	35512-00034	4004

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EXAMINER

GARG, YOGESH C

ART UNIT	PAPER NUMBER
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3625

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/615,025

Applicant(s)

KLEIN ET AL.

Examiner

Yogesh C Garg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

1. Preliminary Amendment a, paper # 2, received on 04/09/2001 is acknowledged and entered. Claims 1, 3, 8, 9, 11, 14, 15, 17, 18, 20, 24 and 25 have been amended and new claims 26 and 27 have been added. Currently claims 1-27 are pending for examination.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-23 and 26-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

2.1. Claimed Invention(s) does not fall within the Technological Art.

The invention as recited in the claims 1-23 and 26-27 is merely an abstract idea that is not within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. See MPEP 2106 II A: Identify and Understand Any Practical Application Asserted for the Invention.....A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See *In re Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also *Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459.. The claimed invention is devoid of any limitation to a practical application in the technological arts. Compare *Musgrave*, 431 F.2d at 893, 167 USPQ at 289; *In re Foster*, 438 F.2d 1011, 1013, 169 USPQ 99, 101

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(CCPA 1971). In absence of any technological environment the 1-23 and 26-27 of the instant application are directed to nothing more than a human making mental computations and manually arriving at the desired result. It is suggested to include the use of technology, such as computerized system, network, etc. in the limitations of claim 1 in order to overcome this rejection.

2.2.Claimed inventions lack practical application of a mathematical algorithm.

Claim 1 recites mathematical steps, " calculatinga measure of tendency .." ; and " repeating step (a)....." ; and " grouping said plural different assets into plural different sectors."

The claimed invention however fails to produce "useful, concrete, and tangible result" and therefore lacks a practical application. The claimed invention merely performs mathematical calculations and then results in grouping different assets into plural different sectors based upon the results of the calculation. The claimed invention is not concrete because it fails to produce a practical application as required under 35 U.S.C. 101 and therefore the claims are analyzed as non-statutory subject matter. Since claims 2-23 and 26-27 are dependencies of claim 1 they will inherit the deficiency of claim 1 and are therefore analyzed and rejected on the same rationale as claim 1.

The above analysis supported by court ruling per *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1368, 1374, 47 USPQ2d 1596, 1601-02 (Fed. Cir. 1998). See MPEP 2106 II A: Identify and Understand Any Practical Application Asserted for the Invention. The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions

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that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (*Brenner v. Manson*, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); *In re Ziegler*, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application.

The above rejection is also supported by MPEP 2106 IV.B.2.b (ii): Computer-Related Processes Limited to a Practical Application in the Technological Arts: There is always some form of physical transformation within a computer because a computer acts on signals and transforms them during its operation and changes the state of its components during the execution of a process. Even though such a physical transformation occurs within a computer, such activity is not determinative of whether the process is statutory because such transformation alone does not distinguish a statutory computer process from a nonstatutory computer process. What is determinative is not how the computer performs the process, but what the computer does to achieve a practical application. See *Arrhythmia*, 958 F.2d at 1057, 22 USPQ2d at 1036. A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In *Sarkar*, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:

No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a "process" under 101. Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present

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in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.

For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *Alappat* 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See *AT & T*, 172 F.3d at 1358, 50 USPQ2d at 1452.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 4, 7-9, 11-13, 16-18, 20, 24, 25, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bekaert et al.* (US Patent 6,125,355), hereinafter, referred to as *Bekaert*, and in view, "Regression analysis"; "Barrons Dictionary of Finance and Investment"; copyright, 1995 by Barron's Educational Series, Inc., Hauppauge, NY, pages 470-471, hereinafter, referred to as *Barrons*, and further being obvious in view of Official Notice.

With regards to claims 1, 3, 4, 7-9, 11-13, 16-18, 20, 24, 25, 26, and 27, Bekaert teaches a method, an apparatus and a computer-readable medium respectively, for classifying assets into business sectors, said method comprising: (a) processing historical data for value of the asset and historical data values for said plural exogenous variables to obtain a price formula for estimating the value of the asset as a function of the exogenous variables and repeating step for each of plural different assets, wherein each of plural different assets comprises a share of stock/bond, comprises performing a statistical regression technique, calculating a representative characteristic, such as weighted average return, of assets in a specific sector and comparing it to the representative characteristic of assets in said specific sector, (see at least ; col.1, lines 9-20, lines 59-63, col.2, lines 29-47, col.3, lines 3-46, col.4, line 14-col.5, line 46, col.11, lines 3-6, col.12, line 59-col.14, line 19).

Bekaert fails to disclose calculating, for each of plural exogenous variables, plural samples of a measure of a tendency for a value of an asset to change as a result of a change in a data value for said each exogenous variable by; and taking a derivative of the price formula to obtain a formula expressing said tendency to change. However, Barrons (pages 470-471) teaches the use of regression analysis, regression coefficients; coefficient of determination and correlation coefficient to establish a relationship of a dependent variable, such as the value of asset in the instant application and one or more independent variables, such as exogenous variables in the instant application, by using historical data for both dependent and independent variables and determine/estimate the change in value of the dependent variable, such as the value of asset in the instant application for a change in the value of the independent variable, such as exogenous variables in the present application. In a given regression model the correlation coefficient is the derivative to determine the measure of the

tendency of the dependent variable, such as the value of an asset in the instant application, to change with respect to a change in the independent variable, such as exogenous variables in the instant application.

In view of the old and well-known concepts and benefits of regression analysis, regression coefficients; coefficient of determination and correlation coefficient in analyzing the changes of dependent variables in the field of securities as explicitly stated in Barrons, it would have been obvious to a person of an ordinary skill in the art at the time of the invention to combine the concept of establishing a relationship of a dependent variable, such as the value of asset in the instant application and one or more independent variables, such as exogenous variables in the instant application, by using historical data for both dependent and independent variables with Bekaert because such statistical techniques will help the users to determine/estimate the changes and movements in the value of the stocks/bonds with respect to changes in the values of inflation rate, interest rate, economic growth factors while optimizing portfolios and computing risk-return analyses, as suggested in Barrons.

Bekaert/Barrons fails to teach the step of grouping said plural different assets into plural different sectors based on similarities of said measures of tendency to change. Official Notice is taken of both the concept and benefits of grouping stocks/securities/assets into sectors based upon similarities, such as putting shares of chemical companies in chemical sector, financial companies in financial sector, computer related companies in computer and technology group. Similarly companies are also classified depending upon their total value of assets, geographical locations, volatility characteristics like Beta, and so on. In view of the Official Notice, It would have been obvious to a person of an ordinary skill in the art at the time of the invention to classify assets based upon the regression coefficients which measure the

tendency to change of an asset value with respect to exogenous variables, such as inflation, interest rate or economic growth rate because such grouping will lend insight to financial advisers and investors to estimate the movement of the asset values in that group.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bekaert/Barrons/Official Notice and further being obvious in view of Official Notice.

With regards to claim 2, Bekaert/Barrons/Official Notice teaches a method for classifying assets into business sectors as disclosed and analyzed above in claim 1. Bekaert/Barrons/Official Notice fails to disclose that the measure of tendency to change comprises a measure of elasticity. Official Notice is taken of the concept and benefits of the correlation coefficients of a multiple linear regression technique as the regression coefficients represent the elasticity of a dependent variable, such as asset value, with respect to a change in the independent variable such as inflation, economic growth, interest rate. Further, it is also old and well-known fact that if a dependent variable is a product of independent variables (like in a Cobb Douglass function), the exponents of the independent variables represent the elasticity of the dependent variable with respect to changes in the independent variable. Also regression coefficients of a log-transformed function would represent elasticity measures. Therefore, in view of the Official Notice, it would have been obvious to a person of an ordinary skill in the art at the time of the invention to combine the steps of calculating regression coefficients of a multiple linear regression function or a log-transformed regression function with Bekaert/Barrons/Official Notice because this combination would enable the users/financial advisers to learn the sensitivity of the dependent variables with respect to the changes in the independent variables.

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6. Claims 5, 6, 19, 21-23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bekaert/Barrons/Official Notice and further in view of Phillips et al. (US Patent 6,473,084), hereinafter, referred to as Phillips.

With regards to 5, 6, 19, 21-23, Bekaert/Barrons/Official Notice teaches a method for classifying assets into business sectors as disclosed and analyzed above in claim 1.

Bekaert/Barrons/Official Notice fails to disclose (a) that the price formula is expressed as a truncated Taylor series expansion, (b) use of statistical clustering technique in grouping plural assets and clustering the historical data values of exogenous variables, (c) use of neural networking to obtain price formula and calculating the measure of tendency of change in the output of price formulas with respect to change in exogenous variables, (d) and use of genetic algorithm to obtain the price formula. However, Phillips, in the same field of estimating predicted values for a share of stock or commodity, teaches (a) that the price formula is expressed as a truncated Taylor series expansion (see at least Phillips, col.46, line 57-col.47, line 45, "...In one example, the model is a fourth order Taylor Series expansion....for various clusters....", (b) use of statistical clustering technique in grouping plural assets and clustering the historical data values of exogenous variables (see at least Phillips, col.43, line 16-col.48, line 11, "... (c) use of neural networking to obtain price formula and calculating the measure of tendency of change in the output of price formulas with respect to change in exogenous variables (see at least Phillips, col.3, line 22-col.4, line 52, "... Financial and Economic Forecasting.....Such techniques include " Neural networks ".....Ideally, neural networks learn from their mistakes and self correct...numeral networks are the foundation of numerous automated trading....on Wall Street....", (d) and use of genetic algorithm to obtain the price formula (see at least Phillips, col.55, lines 47-63). In view of Phillips, it would have been obvious to a person of an ordinary skill in the art at the time of the invention to combine the features of Phillips: (a) that the price

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formula is expressed as a truncated Taylor series expansion, (b) use of statistical clustering technique in grouping plural assets and clustering the historical data values of exogenous variables, (c) use of neural networking to obtain price formula and calculating the measure of tendency of change in the output of price formulas with respect to change in exogenous variables, (d) and use of genetic algorithm to obtain the price formula because it will provide a variety of techniques to measure economic data and formulate forecasts of stock prices and economic data as explicitly disclosed in Phillips (see at least col.3, line 23-col.6, line 30), clustering technique will help to group clusters of forecasters with similar tendencies and avoid difficulties of inconsistent forecaster prediction (see at least Phillips, col.11, lines 16-63) and use of Taylor's series expansion model helps to limit the expansion to a limited exponent thereby helping to compute faster.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bekaert/Barrons/Official Notice and further in view of Ray et al. (US Patent 6,018,722), hereinafter, referred to as Ray.

With regards to claim 10, Bekaert/Barrons/Official Notice teaches a method for classifying assets into business sectors as disclosed and analyzed above in claim 9. Bekaert/Barrons/Official Notice fails to disclose the step of buying an asset based on a result of comparing the asset characteristics. However, Ray teaches the step of buying an asset based on a result of comparing the asset characteristics (see at least Ray col.1, line 55-col.3, line 35). It would have been obvious to a person of an ordinary skill in the art at the time of the invention to combine the feature of Ray, that is, purchasing asset based upon an advice from an expert system (expert system corresponds to results obtained from the comparing step) because it will

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be very timely for the user to purchase securities as soon as expert advice/recommendation received.

8. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bekaert/Barrons/Official Notice and further in view of Official Notice.

With regards to claims 14-15, Bekaert/Barrons/Official Notice teaches a method for classifying assets into business sectors as disclosed and analyzed above in claim 13. Bekaert/Barrons/Official Notice fails to disclose the step of tracking positions of assets. Official Notice is taken of both the concept and benefits of old and well-known practice of tracking position of securities by the owners/manager of the securities so as to remain on the top of their performances of the securities. In view of the Official Notice, it would have been obvious to a person of an ordinary skill in the art at the time of the invention to combine the feature of tracking the position of assets because it will enable the owners/manager of the securities to take timely action, depending upon the advice/recommendations from an expert or by observing the performance. to either sell or buy a particular security with the objective of making profits and avoiding risks of losses.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) US PUB.No.: 2002/0138386 to Maggioncalda et al. and US Patent 4,021,397 to Jones et al. teach a financial advisory system to provide return scenarios for each asset class with respect to one or more exogenous variables.

(ii) US Patent 6,078,904 to Rebane discloses a computer system and method to group assets based upon their risk characteristics.

(iii) US Patent 5,761,442 to Brar et al. discloses a computerized system and a method to select securities using an artificial neural networks which track the performance and output a characteristic related to the risk adjusted return of each security.

(iv) US Patent 5,812,988 to Sandretto teaches a computer-implemented process to estimate simulated returns by inputting exogenous variables.

(v) Hendricks, Darryl; " Evaluation of Value-at-Risk Models Using Historical Data ", FRBNY Economic Policy Review /April 1996, discloses the performance of various Value-at-risk models based upon historical data.

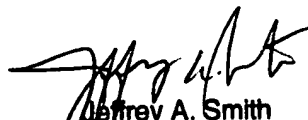
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh C Garg whose telephone number is 703-306-0252. The examiner can normally be reached on M-F (8:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wynn W Coggins can be reached on 703-308-1344. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

Yogesh C Garg
Examiner
Art Unit 3625

YCG
May 1, 2003


Jeffrey A. Smith
Primary Examiner